current flow in one direction through the wire e' of the coils. As the core continues to rotate it next brings one of the wings d' in juxtaposition to north pole piece and one of the wings d in juxtaposition to the south pole piece, whereupon the magnetic line of force from the north pole piece enters said wing d' and flows along the core and thence along the wing d to the south pole piece, thereby going through the windings E in the opposite direction and inducing in the wire e' of the windings a current flow in a direction which is opposite to that first referred to. The device shown has, therefore, a great advantage over other magneto-electric machines, used for this purpose, especially on automobiles, because such other device do not become sufficiently active to produce the desired result until they come into rapid rotation, and therefore it is usually necessary to provide an auxiliary device of some sort, as a dry battery, to produce the igniting sparks necessary to put the engine into operation.

Having described my invention, I claim:

1. In a magneto-electric machine, the combination of a non-rotatable spool on which are armature windings and a rotatable core passed axially through said spool and having, at one end of the spool, two diametrically opposed projecting wings, and having, at the other end of said spool two opposed projecting wings lying in a diametrical plane at right angles to that in which the other two wings lie, with magnets having pole pieces whose faces are concentric with the axis of said core,—the distance between the centers of said pole faces being substantially 90°.

2. In a machine of the character described, a non-rotatable armature winding, a rotatable inductor core passed axially through said winding and having on one side of the winding diametrically opposed wings and having on the other side of the winding diametrically opposed wings lying in a plane at right angles to that of the first named wings, with magnetic pole pieces on opposite sides of the winding and having faces concentric with the said core, the centers of said pole faces being substantially 90° apart.

3. In a machine of the character described, a non-rotatable armature winding, a rotatable inductor core passed axially through said winding and having on one side of the winding diametrically opposed wings and having on the other side of said winding diametrically opposed wings lying in a plane at right angles to that of the first named wings, magnetic pole pieces on opposite sides of the winding, there being two pieces of opposite polarity on each side of the winding, the pieces on each side of the winding being in the same axial plane with pieces having the same polarity on the opposite side of the winding.

In testimony whereof, I hereunto affix my signature in the presence of two witnesses.

JOSEPH A. WILLIAMS.

Witnesses:
E. B. GILCHRIST,
E. L. THURSTON.